SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. List the various number system and explain each of them.

17. Simplify the following expression using K-map and draw the circuit diagram for simplified expression

$F(A, B, C, D) = \sum m(0,1,2,5,8,9,10,12,13)$

18. Discuss the function of a decoder. Draw the gate equivalent circuit of a 3 to 8 decoder and explain its working.

19. Explain the operation of a ring counter with neat circuit diagram.

20. Explain the R-2R Ladder type D/A convener.

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APRIL/MAY 2025

CEL43/BEL43 — DIGITAL ELECTRONICS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Convert $(765)_8$ to decimal.

2. Define the term bit.

3. State the sequence of operator precedence in Boolean expression.

4. Reduce $A'B'C + A'BC' + A'BC$.

5. What is a full-subtractor?

6. What is multiplexer?

7. What is flip-flop?

8. Define Race Around Condition.

9. What are the advantages and disadvantages of R-2R ladder DAC.

10. Define resolution with respect to ADC.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Explain about excess — 3 code.

Or

(b) (i) Convert the hexadecimal number $(1E.53)_{16}$ to octal number.

(ii) Convert the octal number $(651.124)_8$ to hexadecimal number.

12. (a) Explain the working of NAND gate as universal gate with truth table.

Or

(b) Explain SOP. What are standard products?

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13. (a) Design a combinational logic circuit that has four inputs and one output. The output produced is 1 when input is greater than 1000.

Or

(b) Differentiate between combinational circuits and sequential circuits.

14. (a) Explain the operation of T flip flop with its truth table.

Or

(b) Write about asynchronous counter and design a mod-4 counter.

15. (a) With neat diagram explain the dual slope type A/D convener.

Or

(b) Distinguish between ADC & DAC.